

OC3140

Lab2 Probability Distribution

1. From the historical record, the January temperature at city A is normally distributed. The mean and standard deviation values are $22.2^{\circ}F$ and $4.4^{\circ}F$, respectively, use both standard normal table (Chapter3, P.23 figure 3.12) and matlab function normcdf.m answer the follow questions.
 - a. What is the probability that the temperature is colder than $21.4^{\circ}F$?
 - b. What is the probability that the temperature is between $22^{\circ}F$ to $23^{\circ}F$?
 - c. What is the probability that the temperature is hotter than $25^{\circ}F$?
2. If another study found out that the January temperature at city A follows the Gamma distribution. Use matlab function gamcdf.m answer the same questions as problem-1.
3. Use matlab function normpdf.m and gampdf.m plot and compare the PDF curves for Problems No.1 (normal distribution) and No.2 (Gamma distribution). Note: plot these two distributions on the same graph.

Note: normcdf.m and gamcdf.m are norm and Gamma cumulative distribution functions. Cdf.m is the universal cumulative distribution function.

```
>> P = normcdf(x, m, s);
```

```
Or >> P = cdf('norm', x, m, s);
```

The return will be the probability of normal distribution (<x).

normpdf.m and gampdf.m are norm and Gamma probability density functions. pdf.m is the universal probability density function.

```
>> p = normpdf(x, m, s);
```

```
Or >> p = pdf('norm', x, m, s);
```

The return will be the probability density of normal distribution at x.

Use help command to see more detail informations.